

REMARKS

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks. The amendments are supported by the original specification and claims, and at least at paragraphs [0051] and [0063] in the specification.

Rejection under 35 U.S.C. § 112, second paragraph

In the Office Action, beginning at page 3, Claims 2-3 and 9 were rejected under 35 U.S.C. § 112, second paragraph, as reciting subject matters that allegedly are indefinite. Applicant respectfully requests reconsideration of this rejection.

Regarding the rejection recited in paragraph 10a, Claim 1 has been amended to clarify that enhancement of glutamine synthetase (GS) activity is due to modification of adenylation of GS.

Regarding the rejection recited in paragraph 10b, Claim 9 has been amended as suggested by the Examiner.

For at least the foregoing reasons, Applicant respectfully submits that Claims 2-3 and 9 fully comply with 35 U.S.C. § 112, second paragraph, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 112, first paragraph

In the Office Action, beginning at page 4, the rejection under 35 U.S.C. § 112, first paragraph, to Claims 1-3 and 9 was maintained. Applicants respectfully request reconsideration of this rejection.

The amendment of claim 1 is fully supported by lines 6-7 of paragraph [0051] in the specification. It is noted that the Office Action asserts that any modification that results in enhanced glutamine synthetase activity is encompassed; however, claim 1 recites that the modification must result in the adenylation of glutamate synthetase being

reduced or eliminated. Such modifications are described in the specification, at least in the Examples, and when this disclosure is combined with the knowledge in the art, it is clear that applicants have adequately described, and were in possession of, the invention.

In the Office Action, beginning at page 6, the rejection under 35 U.S.C. § 112, first paragraph, to Claims 1-3 and 9 was maintained. Applicants respectfully request reconsideration of this rejection.

Claim 3 has been amended to replace “comprises mutating” and “comprises” to “is a mutation in” and “is”, respectively. Furthermore, as stated above, the Office Action asserts that any modification that results in enhanced glutamine synthetase activity is encompassed; however, claim 1 recites that the modification must result in the adenylation of glutamate synthetase being reduced or eliminated, and wherein such modification enhances the activity of glutamine synthetase. An alternative method for enhancing glutamate synthetase activity is also recited, in that the copy number of the glutamate synthetase gene can be increased. Also, the arginine repressor activity must be reduced or eliminated, so enhanced activity of the arginine repressor is not encompassed, as asserted by the Office Action on page 7. Applicants assert that the scope of the claims must be analyzed in light of the specification, the level of skill in the art, which is very high in this art, and the knowledge in the art. It is asserted that one of ordinary skill could practice the invention without undue experimentation based on the description in the specification combined with the knowledge in the art regarding the arginine repressor and glutamate synthetase, a high knowledge of general manipulative procedures for bacteria, and the high level of skill in this art.

For at least the foregoing reasons, Applicant respectfully submits that Claims 1-3 and 9 fully comply with 35 U.S.C. § 112, first paragraph, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 103(a)

In the Office Action, beginning at page 8, Claims 1-3 and 9 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Suga et al. in view of the disclosure of Jakoby et al. (FEMS Microbiol. Lett. 173:303-310) and U.S. Patent No. 3,849,250 issued to Nakayama et al.. Applicants respectfully request reconsideration of this rejection.

The Office Action states that Suga et al. disclose that L-arginine production is enhanced by disrupting an arginine repressor, and Jakoby et al. disclose a GS mutant having a "Y405F" mutation whose activity is not decreased in the presence of ammonia and that claims 1-3 and 9 of the present invention are obvious by combining the disclosures of these documents. However, Jakoby et al. neither disclose nor suggest that production of L-arginine and L-lysine could be improved by modifying a coryneform bacterium to enhance GS activity. Therefore, a person skilled in the art would not expect that the combination of enhancing the GS activity and disrupting the arginine repressor would result in the production of L-lysine and L-arginine. Therefore, the present invention is not obvious over Suga et al., even combined with the disclosures of Jakoby et al. and Nakayama et al.

The Examiner is directed to Table 3 in the specification, which demonstrates that the combination of enhancing the GS activity and disrupting the arginine repressor has a synergetic effect on the production of L-lysine and L-arginine. Such an effect could not be predicted based upon the teachings of the cited art, since the teachings of Jakoby et al. do not even address such production, and Suga et al. does not even suggest manipulation of glutamine synthetase activity. Furthermore, and for this reason, there is no motivation to combine these two references, and Nakayama et al. fail to make up for the deficiencies of these two references, nor provide any motivation for the combining the teachings.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of Claims 1-3 and 9, each taken as a whole, would not have been obvious to one

of ordinary skill in the art at the time of the invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully request withdrawal of the rejection thereof under 35 U.S.C. § 103(a).


Conclusion

For at least the foregoing reasons, Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Steadman believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, he is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the undersigned authorizes any necessary fees to our deposit account 50-2821.

Respectfully submitted,

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